



HSE235

Advanced Process HAZOP

Course Introduction:

It is universally recognized that for any company to succeed it must take a proactive approach to risk management. Over the last few years companies and a number of countries legislators have been focusing on process safety as a method to reduce the risks posed by hazardous industries. Process Hazard Analysis (PHA) is recognized as being a critical tool in the implementation of a successful risk management system.

As Hazard and Operability (HAZOP) studies are now recognized world-wide as being the qualitative risk assessment methodology of choice in the Process Industries, there will be additional focus on this specific aspect of Process Hazard Analysis.

Course Objectives:

Upon successful completion of this course, the delegates will be able to:

- Apply advanced process HAZOP and risk assessment techniques
- Discuss mechanics of dispersion, fire, explosion and toxic releases
- Explain the concept of Quantified Risk Assessment "QRA" and the HAZOP study methodology
- Practice HAZOP team leadership
- Understand the concepts of risk assessment and risk management
- Understand the estimation and evaluation of risks - qualitative, semi-quantitative and quantified risks
- Apply techniques for hazard identification and analysis - check-lists, risk profiling, HAZOP, FMEA and task-based risk assessment
- Apply cause-consequences analysis - the role of fault trees and event trees in accident prevention
- Understand HAZOP studies their benefits and their short comings
- Understand the requirements of a team leader or facilitator, scribe and team members during HAZOP studies
- Facilitate a HAZOP study

Organizational Impact:

- In addition to the professional development of staff, the organization should be able to prioritize resources to demonstrate that process risks are adequately controlled.

Personal Impact:

- Attendees will be able to apply skills learnt from this training at a practical level to identify sources of major hazards and to prioritize decisions for their control.

Who Should Attend?

This course is intended for project engineers, process engineers involved in design and modification, instrumentation and control engineers, maintenance personnel and HSE technical personnel.

Course Outline:

Day 1:

Introduction to Risk Assessment

- Course introduction: delegate and tutor introductions; course objectives
- The concepts of hazards, risk and risk assessment
- Methods for risk evaluation
- Integrating risk assessment within Risk Management
- Qualitative, Semi-Quantitative and Quantitative Risk Assessment methodologies

Feedback and review of Day 1

Day 2:

Risk Assessment Techniques: HAZOP

- Introduction to hazards identification and analysis techniques
- Techniques for hazard identification and analysis – HAZOP
- Where and when to use HAZOP and the requirements for a successful HAZOP study
- Team composition for HAZOP studies
- Guide words and process variables used for HAZOP studies
- Syndicate exercise - application of HAZOP to relevant processes

Report back and review of Day 2

Day 3:

HAZOP Leadership Techniques

- HAZOP team leader/facilitator requirements
- HAZOP scribe requirements
- Facilitating HAZOP studies, do's and don'ts
- Information required to allow successful HAZOP studies

- Case study where each delegate has the opportunity to facilitate a HAZOP meeting
- Review of commercial software used for HAZOP and Management of Change 'MOC'

Report back and review of Day 3

Day 4:

Consequence Analysis

- Theory behind fire, explosion and toxic dispersion modeling utilized in Quantitative Risk Assessments
- Types of fires and their effects on people and equipment
- Types of explosions and their effects on people and equipment
- Review of software available for consequence calculations

Report back and review of Day 4

Day 5:

The Role of QRA

- Introduction to Quantified Risk Assessment "QRA"
- The role of Event Tree Analysis in scenario development
- The role of Fault Tree Analysis for multi-causation analysis
- Applications for ETA and FTA
- Failure data for use in QRA's
- Societal Risk and Individual Risk
- Review of software available for Quantitative Risk Assessments
- Report back on day 5 and discussion

Wrap-up and review of Day 5

Course Certificate:

International Center for Training & Development (ICTD) will award an internationally recognized certificate(s) for each delegate on completion of training.

Course Methodology:

A variety of methodologies will be used during the course that includes:

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionnaires
- Group Work
- Discussion
- Presentation

Course Fees:

To be advised as per the course location. This rate includes participant's manual, Hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Timings:

Daily Course Timings:

08:00 - 08:20	Morning Coffee/Tea
08:20 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Coffee/Tea/Snacks)
13:30 - 15:00	Last Session